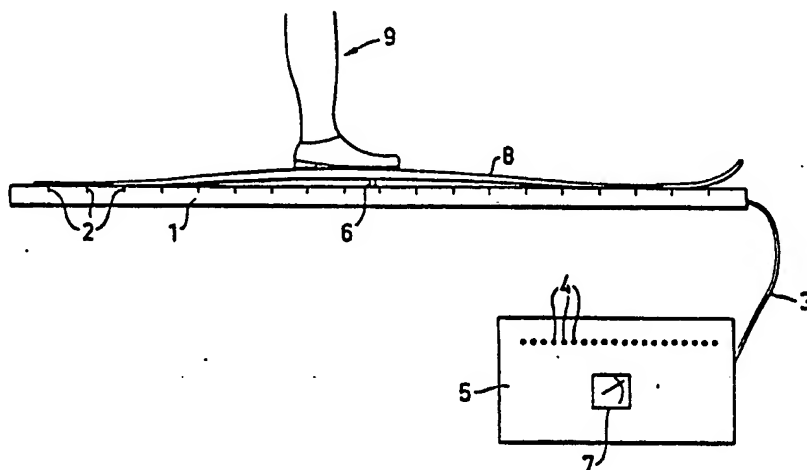




## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<b>(51) International Patent Classification:</b> G01M 5/00; A63C 11/00	<b>A1</b>	<b>(11) International Publication Number:</b> WO 79/00207 <b>(43) International Publication Date:</b> 19 April 1979 (19.04.79)
<b>(21) International Application Number:</b> PCT/SE78/00059 <b>(22) International Filing Date:</b> 12 October 1978 (12.10.78) <b>(31) Priority Application Number:</b> 7711519-4 <b>(32) Priority Date:</b> 13 October 1977 (13.10.77) <b>(33) Priority Country:</b> SE	<b>(71) Applicant:</b> NORBERG, Sigurd; 5, Violgängen, S-831 00 Östersund, Sweden. <b>(72) Inventor:</b> Applicant is also the inventor. <b>(74) Agents:</b> ONN, Christer; DAHLBERG, Olof; FAUGERT, Einar; LERFELDT, Nils; ONN, Staffan; AB Stockholms Patentbyrå, Zacco & Bruhn, Box 3129, S-103 62 Stockholm, Sweden. <b>(81) Designated States:</b> DE, US.  Published with: <i>International search report</i>  <div style="text-align: right;"> <i>Doc. No. engdrom</i>            24 APR. 1979         </div>	

**(54) Title:** A DEVICE FOR TESTING CROSS-COUNTRY SKIS**(57) Abstract**

A device for testing cross-country skis. The stiffness of a cross-country ski varies in response to the weight of the ski runner as well as to the running technique applied by the runner. The present invention has the object to provide a device, by which a pair of cross-country skis can be tested in a simple way. The device comprises a pair of bars (1), on which the pair of skis (8) to be tested are placed. The device further comprises scanning means (2, 6) provided in said bars (1) and electrically connected to an instrument panel (5). When the runner steps onto the skis (8), they will be pressed down against the bars (1), and the scanning means (2, 6) record the abutment of the skis (8) to the bars (1). This gives rise to information on the instrument panel (5) with respect to the length, the height and the position of the free span in the longitudinal direction of the ski. By means of this information can be determined rapidly and simply whether the tested skis are suited to the runner.

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A method and a device for testing cross-country skis

This invention relates to a method and a device for testing cross-country skis.

On modern cross-country skis the span pressure may vary from 20 to 120 kg for the same ski length of the same manufacture. Due to differences in the span pressure the skis will have different properties for ski runners of different weight.

If the ski is too hard for the ski runner he cannot manage to depress the whole ski at kick-off, which will give a constantly bad hold apart from waxing. A too loose ski, where the ski runner easily depresses the whole span, will provide bad running and the ski-wax will be quickly worn off under the hold.

Moreover, uncertainty as to the length of the span will make every skier uncertain, where the ski is to be waxed for glide or hold.

The method generally used at present to test the span pressure consists of "pressing" on the skis manually. However, this method provides an uncertain result, which is unsatisfactory for the ski runner.

It is the object of the present invention to provide a device which tests suitable skis for a person in a rapid and reliable manner. This is done by means of a device provided with the characteristic features defined in the



appended claims.

An illustrative example of the invention will be described below with reference to the enclosed figure, which shows schematically an embodiment of the device of the invention.

In the figure a device according to the invention is shown, which comprises two bars 1 (one hidden in the figure), which can consist of U-profiles of e.g. aluminium.

Each bar 1 is provided with a number of microswitches 2, which are uniformly spaced along the bar 1. Each microswitch 2 is connected to a lamp 4 on a control board 5 via a cable 3. Like the microswitches 2 the lamps 4 are preferably arranged in a row after each other (see Fig.).

The microswitches 2 function e.g. in such a way that when a ski is depressed to contact with a microswitch a power circuit will be closed, the lamp 4 on the panel 5 connected with the microswitch 2 being lit.

The bars 1 are also provided with a device for measuring the span height of the skis being tested. This device e.g. consists of a potentiometer 6, which is located about in the middle of the bar in its longitudinal direction. The potentiometer 6 is also via the cable 3 connected to an indication means on the board 5. In this illustrative example the indication means is a pointer instrument 7, which thus indicates the height of the span directly, e.g. in mm.

When testing suitable skis for a person by means of the device of the invention is is proceeded as follows.



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The pair of skis 8 to be tested are placed on the bars 1 as shown in the figure. It is then seen to it that the point where the ski has its maximum span height will be straight in front of the potentiometer 6.

The person 9 then steps onto the skis 8 and places his feet in the positions of the skis which will be entered in running. At the person's 9 load on the skis 8 they will be depressed to contact with the bars 1 in their outer portions as seen in the longitudinal direction, the microswitches 2 arranged in the bars being actuated to close the associated power circuit and to light the corresponding lamp 4 on the board 5. By studying the number of lamps not being alit it is simple to calculate the length of the span when the constant distance between the microswitches is known. Information about the position of the span in the longitudinal direction of the ski is also obtained by observing which lamps are not alit. Then it is very easy to mark the extension of the span on the skis, which is important information for applying ski-wax for hold and glide.

The height of the span in loaded position of the skis 8 is read directly on the pointer instrument 7.

With information about the length, height and position of the span and considering the person's individual desiderata as to a soft or hard ski it is possible to decide whether the tested pair of skis is suitable.

The interpretation of the information obtained can be facilitated by using keys to a code of different types, which can preferably be arranged on the board 5.

By means of the device described above it is thus possible to test in a very simple and rapid way a suitable pair of skis for a person.



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The number of microswitches shown in the figure and the associated lamps are of course not crucial but can be increased or reduced, the exactitude, however, of the device being influenced.

It is suitable that the board 5 is placed on a stand (not shown in the figure) in order to obtain a suitable reading height for the person testing the skis and also for the seller of the skis.

Of course the invention is not restricted to the illustrative example described above but may be freely varied within the scope of the following claims.

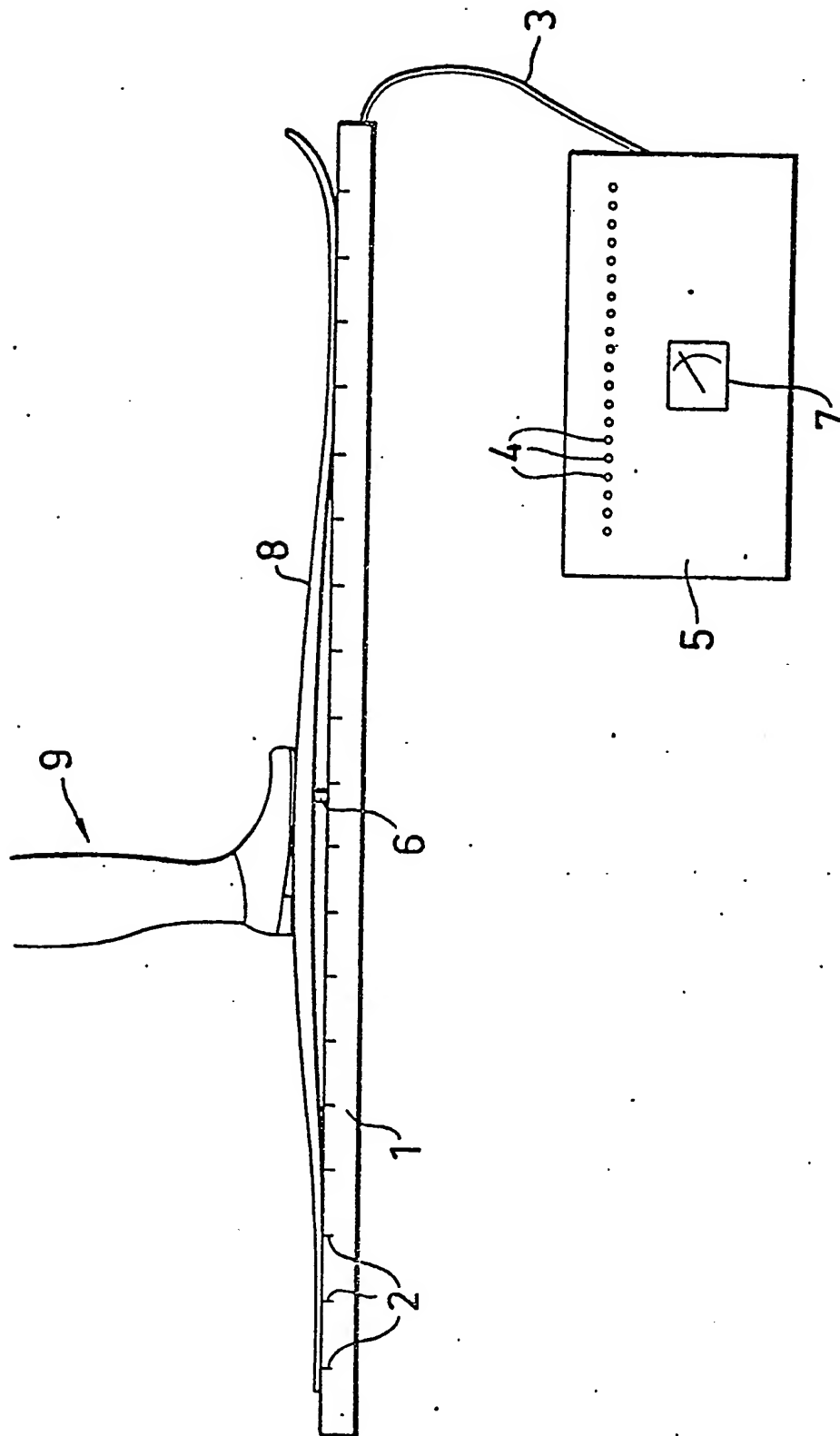


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## PATENT CLAIMS

1. A device for testing cross-country skis comprising two bars (1), on which the pair of skis (8) to be tested are placed, characterized by sensing means (2, 6) arranged in the bars, which means are electrically connected to indicating means (4, 7).
2. The device of claim 1, characterized in that the sensing means comprise a number of microswitches (2), which are uniformly spaced in the longitudinal direction of the bars (1).
3. The device of claim 1 or 2, characterized in that the sensing means comprise a means (6), preferably a potentiometer, for determination of the span height of the skis (8).
4. The device of any one of the preceding claims, characterized in that the indicating means comprise lamps (4), each lamp being connected to a microswitch (2) via a cable (3).
5. The device of any one of the preceding claims, characterized in that the indicating means comprise an indication pointer (7), which is connected via a cable (3) to a potentiometer (6) included in the sensing means, said potentiometer being located about in the middle of the bar (1) as seen in its longitudinal direction.
6. The device of any one of the preceding claims, characterized in that the indicating means (2, 6) are arranged on an instrument board (5).







# INTERNATIONAL SEARCH REPORT

International Application No. PCT/SE78/00059

<b>I. CLASSIFICATION OF SUBJECT MATTER</b> (if several classification symbols apply, indicate all) *		
According to International Patent Classification (IPC) or to both National Classification and IPC		
G 01 N 5/00, A 63 C 11/00		
<b>II. FIELDS SEARCHED</b>		
Minimum Documentation Searched *		
Classification System	Classification Symbols	
IPC 2	G 01 B 5/00, 5/20; G 01 M 5/00; G 01 N 3/00, 3/20; A 63 C 11/00	
Documentation Searched other than Minimum Documentation to the extent that such Documents are Included in the Fields Searched *		
SE, NO, DK, FI classes as above		
<b>III. DOCUMENTS CONSIDERED TO BE RELEVANT</b> 14		
Category *	Citation of Document, 14 with indication, where appropriate, of the relevant passages 17	Relevant to Claim No. 18
A	NO, C, 68203 published 1948, November 1, K Graaten	1
A	US, A, 3760636 published 1973, September 25, see column 3, lines 37 to 49, Measuring & Process Control Ltd	1
A	DE, A1, 2512279 published 1975, October 16, A Stäger	1, 5-6
* Special categories of cited documents: 16 <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>"A" document defining the general state of the art</p> <p>"E" earlier document but published on or after the international filing date</p> <p>"L" document cited for special reason other than those referred to in the other categories</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> </div> <div style="width: 45%;"> <p>"P" document published prior to the international filing date but on or after the priority date claimed</p> <p>"T" later document published on or after the international filing date or priority date and not in conflict with the application, but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance</p> </div> </div>		
<b>IV. CERTIFICATION</b>		
Date of the Actual Completion of the International Search *	Date of Mailing of this International Search Report *	
1978-12-06	1978-12-12	
International Searching Authority *	Signature of Authorized Officer 20	
Swedish Patent Office	<i>Stefan Lennefors</i> Stefan Lennefors	

Form PCT/ISA/210 (second sheet) (October 1977)

## FURTHER INFORMATION CONTINUED FROM THE SECOND SHEET

II

Continuation classification system.

Deutsche Klassen: 42k:27, 49/01

US classification: 73/89, 100

V. ☐ OBSERVATIONS WHERE CERTAIN CLAIMS WERE FOUND UNSEARCHABLE <sup>10</sup>

This International search report has not been established in respect of certain claims under Article 17(2) (a) for the following reasons:

1. ☐ Claim numbers \_\_\_\_\_, because they relate to subject matter <sup>11</sup> not required to be searched by this Authority, namely:2. ☐ Claim numbers \_\_\_\_\_, because they relate to parts of the International application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out <sup>12</sup>, specifically:VI. ☐ OBSERVATIONS WHERE UNITY OF INVENTION IS LACKING <sup>11</sup>

This International Searching Authority found multiple inventions in this International application as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this International search report covers all searchable claims of the International application.2. ☐ As only some of the required additional search fees were timely paid by the applicant, this International search report covers only those claims of the International application for which fees were paid, specifically claims:3. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International search report is restricted to the invention first mentioned in the claims; it is covered by claim numbers:

## Remark on Protest

- ☐ The additional search fees were accompanied by applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.